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lime, and that there is no such mineral as cryptolite. The rare earths were recognized by means of spectral analysis and are present in all apatite. Their presence in the Canadian apatite has also been proved by chemical analysis.

#### GEOGRAPHY AND TRAVELS.<sup>1</sup>

THE JEANNETTE AND THE SEARCH EXPEDITIONS.—A portion of the crew of the *Jeannette* arrived in two boats at the mouth of the Lena about the 17th of September last. They report that their vessel was crushed in the ice on June 23, 1881, in N. lat.  $77^{\circ} 15'$  E. long.  $157^{\circ}$ , about one hundred and fifty miles north-east of the New Siberian Islands. It appears that the *Jeannette* was caught in the pack on October 1, 1879, and drifted with the winds and currents up to the time she was abandoned.

From the Report of Captain C. L. Hooper we learn that the U. S. revenue steamer *Corwin*<sup>2</sup> sailed from St. Michaels on July 9th 1881. She reached Herald Island on July 30th, and, a landing being effected, a thorough exploration of the island was made. The cliffs which render it almost inaccessible are about 1200 feet high. After much difficulty with the ice Capt. Hooper succeeded in reaching Wrangell Land, off the mouth of a river. The landing was made at about the locality where the supposed Plover Island has generally been designated on the maps and is in latitude  $71^{\circ} 4'$  N. and longitude  $177^{\circ} 40'$  W. and is the most eastern part of Wrangell Land. It is forty-five miles from Herald Island and in clear weather is in plain sight from it. Wrangell Land was taken possession of in the name of the United States and re-named "New Columbia." No snow was found in the lowlands or hills though remains of very heavy drifts were observed on the distant mountains. The river was named Clark; it was seventy-five yards broad and twelve feet deep. The party proceeded four miles inland and from a high hill traced the course of the river northwards for about forty miles. Over twenty species of Arctic plants were found in bloom. Capt. Hooper believes that the sea between Herald Island and Wrangell Land is almost always closed; the water is shallow and solid ice appears to remain constantly frozen to the bottom. The *Corwin* next visited Point Barrow which was found to be clear of ice. She arrived at Plover Bay on August 4th, finding the *Golden Fleece* there. After an unsuccessful attempt to revisit Herald Island and Wrangell Land the *Corwin* left the Arctic Sea on September 14th, and reached San Francisco on the 22d of October.

The U. S. steamer *Rodgers* reached Plover Bay about August 14th and arrived at Herald Island on August 24th, where a landing was made. The south coast of Wrangell Land was reached after passing through about twelve miles of loose ice on

<sup>1</sup> Edited by ELLIS H. YARNALL, Philadelphia.

<sup>2</sup> The name of this vessel is *Corwin* not Thomas Corwin.

August 25th. The next day a good harbor was found and exploring parties were sent out to examine the interior and the coast line. A mountain about 2500 feet high was ascended. Open water was seen in all directions except between the west and south-south-west, in which quarter a high range of mountains seemed to terminate the land. Two parties were sent out in boats, of which one followed the eastern and the northern shores until stopped by ice when the boat had to be abandoned and a return made on the land, while the other boat took the western shore along which it passed until stopped by the same ice, after passing the most northern point of Wrangell Land, where the position of the other party could be seen. Wrangell Land is thus shown to be an island about sixty miles in length. At the northern end there is a current running to the north-west at about six knots an hour. The *Rodgers* anchorage was in N. lat.  $70^{\circ} 57'$  W. long.  $178^{\circ} 10'$ . It is situated to the south and west of Capt. Hooper's landing place at the mouth of Clark River. The *Rodgers* afterwards reached N. lat.  $73^{\circ} 44'$  W. long.  $171^{\circ} 48'$  on September 19th. She expected to winter in St. Lawrence Bay.

The U. S. steamer *Alliance* reached lat.  $79^{\circ} 36'$ , in the neighborhood of Spitzbergen, in September last. Captain Wadleigh found the ice extending far to the eastward and southward of the ordinary limit, and it was also much heavier. The Norwegian walrus hunters, who ordinarily go to Hinlopen Straits and even further on the north coast of Spitzbergen, did not this season get as far to the north and east as the *Alliance*. Wyde Jan's Water on the south-east was full of ice, which extended from Hope Island nearly to Cape Petermann, Novaya Zemlya. Captain Wadleigh says that the southerly position of the ice is accounted for by the last very severe winter, and the fact that during July and August the usual southerly winds did not prevail and force the ice northwards. Captain David Gray confirms this report in a letter given in the Royal Geographical Society's Proceedings, in which he states that the ice for the past two years has been almost stationary, notwithstanding that strong northerly winds prevailed. "The absence," he writes, "of southerly drift can only be accounted for by the lanes of water making amongst the floes being immediately frozen up again with the severe frosts, keeping the ice fixed together, and preventing any large waters being made to force the ice south. The ice has not diminished during the last two summers so fast as usual owing to the frosts covering the lanes and pools of water with bay ice, preventing the wash of the water from cutting into it and washing it away. Close ice melts very slowly; open ice soon disappears."

The Lady Franklin Bay Expedition made the most rapid passage through Melville Bay ever recorded and reached their destination one month after leaving St. John's, N. F. They stopped to take aboard natives, furs and dogs at Godhaven, Rittenbank,

Uppernavik and Proven. Dr. O. Pavy joined the company at Godhaven. They sailed from Uppernavik through the middle passage to Cape York in thirty-six hours, and, though delayed by a fog for thirty-two hours, were only six days and two hours in reaching Lady Franklin Bay. They stopped at Cary Island and visited the depot of provisions placed there by Captain Nares in 1875. They also visited Littleton Island, where they found the English Arctic mail, left by the *Pandora* in 1876; and the *Polaris* quarters at Life-boat Cove, where they discovered many relics, including the transit instrument belonging to that unfortunate company. They also stopped at Washington Irving Island and Cape Hawks to inspect depots established by Nares, and landed supplies at Carl Ritter Bay. No heavy ice was met until inside of Cape Lieber, eight miles from their destination. They entered Discovery Harbor on August 11th, and when the *Proteus* left Lieutenant Greely had got the house erected and partly framed and three months' rations of musk cattle secured. About 140 tons of coal were landed from the *Proteus*. The *Proteus* reached St. John's on her return voyage on September 19th.

The Point Barrow party also safely reached their station early in September. The *Golden Fleece* returned to San Francisco on November 5th. The station is five miles from Point Barrow and is called Ooglalamie. The observatory was completed when the *Golden Fleece* left on September 17th and the main building begun. Early in the spring Lieut. Ray hopes to explore the valley of the Coppermine and afterwards visit Kotzebue Sound where a vessel is to be sent with supplies.

ARCTIC EXPLORATION.—In a paper read by Professor George Davidson before the Geographical Society of the Pacific, Plover Island was described as a low pyramidal rock extending as a cape from the east end of Wrangell Land and connected by a low neck of swampy land covered with grass.

The Russian expedition to the mouth of the Lena, to establish one of the stations agreed upon by the International Polar Conference, will go by rail to Nishni Novgorod, thence by sleigh to Perm, by rail to Yekaterineburg, by sleigh to Irkutsk where they are expected to arrive in January and stay until May, to complete their preparations. They will descend the Lena on a barge. Owing to a lack of funds the second Russian station in Novaya Zemlya will not be established at present.

In a recent work "Die Temperatur Verhältnisse des Russischen Reichs" by Professor Wild of St. Petersburg, the Siberian pole of cold in winter is transferred from the neighborhood of Yakutsk to a point somewhat further north, lying in the Arctic circle about E. long. 125°. At this center of maximum cold round which the isotherms lie in fairly regular ovals, the mean temperature in January sinks as low as—54° F., the mean temperature at Yakutsk being 11° higher.

The *Athenæum* states that "Captain J. W. Fisher, of the American whaler *Legal Tender*, reached San Francisco at the end of September from Point Barrow, and he reports that in August the ice barrier was over twenty miles north of the point, and was every day moving further northward. The steam whaler *Belvidere* had gone much further to the east than the rest of the whaling fleet in an endeavour to reach the Mackenzie River, about 450 miles east of Point Barrow. On her outward voyage the *Legal Tender* had on board Drs. Arthur and Aurel Krause, who had been sent out by the Bremen Geographical Society to undertake a journey in the coast districts and islands of Behring Strait and Sea, partly for the purpose of investigating the ethnology and marine zoölogy of Alaska. Capt. Fisher landed them at St. Lawrence Bay where they were to spend a fortnight, and then proceed to East Cape and the Diomed Islands. On returning to St. Lawrence Bay they proposed to work their way down the Siberian coast to Plover Bay. Capt. Fisher states that Mr. W. H. Dall, of the U. S. Coast Survey, has made a great mistake in his reports respecting the current in Bering Strait. During the whole summer a strong current sets northward through the strait and it is only in September or October that northerly winds affect it. Mr. Dall's observations, he says, extended only over a few days and were made in an eddy current under the lee of the Diomed Islands. Capt. Fisher further reports that off Point Barrow a current of three or four knots an hour sets regularly along the land to the north-east, but it does not extend for fifty miles off the shore."

GEOGRAPHICAL NOTES.—A committee of the Royal Society consisting of Sir George Airy, Professor J. Adams and Professor Stokes, appointed to consider what "might yet be required in order to render the pendulum operations, which have been carried out in connection with the great trigonometrical survey of India, reasonably complete as an important contribution towards the determination of gravity all over the earth," have reported that it is desirable that "the Indian group of stations, which have already been connected with Kew, should be differentially connected with at least one chain of stations which are so connected with one another, and which have been employed in the determination of the figure of the earth." They refer to the suggestion made by Professor Peirce of the U. S. Coast Survey, that the same two pendulums that were swung in India should be used first at Kew and then at Washington. They say—"As Washington is, or shortly will be, connected differentially with a large chain of stations widely distributed in America and elsewhere, we think that the value of the Indian series would be decidedly increased by being connected with one of the American stations, such as Washington."—It appears that as early as the sixteenth century plans had been formed by the Spanish for canals in Central

America between the two seas. A canal via the lake of Nicaragua was projected in 1548. Other explorations were made, for this purpose, in the Isthmus of Tehauntepec and the Isthmus of Panama.—M. Alphonse Milne Edwards has recently been making investigations in the waters of the Mediterranean. During the seventy days he was so engaged the greatest depth reached by sounding and dredging was 2600 metres. The bottom was found not devoid of living beings, species of low organization being found between depths of 1068 and 2600 metres. At an average depth of 250 metres the temperature was constant at 13° Cent. This explains the small development of life in the depths of that sea, the muddy bottom and the absence of rocks being also unfavorable to germination. The report also confirms the belief that the Mediterranean is a sea of recent formation.—The English missionary Mr. Pearson has recently returned home from Uganda with a large amount of information concerning the country and the Victoria Nyanza. He has surveyed the western shore of the lake, taken many observations, and left a careful meteorological journal. He speaks highly of the general accuracy of Mr. Stanley's work and found that nearly all his latitudes were correct.—The reinforcement of laborers for Mr. Stanley, numbering 135, left Zanzibar for the Congo on October 20th. The Belgian Association has abandoned its proposed expedition to Nyangwe which was to have effected a junction with Mr. Stanley on the lower Congo.—*Petermann's Mittheilungen* for November last contains a valuable paper by Ernest Marno on the Grass Barriers of the Nile.

#### MICROSCOPY.<sup>1</sup>

A HOLLOW GLASS SPHERE AS A CONDENSER FOR MICROSCOPIC ILLUMINATION.—A glass globe filled with water has long been employed by watchmakers and engravers for the purpose of condensing the light upon their work; it was also used by some of the early microscopists. Ledermüller, in his "Mikroskopische Gemüth-und-Augen-Ergözung" (Microscopic Mind-and-eye-delights) 1763, gives a representation of his lamp and condenser; the latter is a globe without foot or neck, and is supported on the top of a square brass rod by six claws, the lamp being supported in the same way, both of them sliding into square holes at the opposite ends of a brass arm fixed on a stand. In the "Micrographia," Hooke gives a figure of his microscope and accessories, amongst them is a globe condensing the light on the stage of the instrument. This form of condenser was probably used by many of the old microscopists, but it appears soon to have fallen into disuse, as it is not mentioned by Adams in his "Micrographia Illustrata," 1771, or in his "Essays on the Microscope," 1787. Possibly the opticians of the period did not care to introduce so

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